CLAIMS

1. A device for controlling the quality of an operation of laser-beam welding, resurfacing or machining of a part, comprising at least one gas-blowing nozzle (1), the said nozzle being offset behind the said laser beam in the direction of the said operation, the said nozzle being equipped with a duct (5) for ejection of a flow of the said gas and equipped with at least one photosensitive sensor (3, 3') disposed behind the said ejection duct (5) in such a way that it can receive at least one light signal penetrating into the said ejection duct (5) in the direction opposite to the ejection of the said gas flow and originating from the interaction between the said laser beam and the material of the said part during the said operation of welding, resurfacing or machining.

2. A device according to claim 1, characterized in that the said gas-blowing nozzle (1) comprises a duct (11) placed in the extension of the said ejection duct (5), and in that the said photosensitive sensor (3) is disposed in the said duct (11).

3. A device according to claim 1, characterized in that the said gas-blowing nozzle (1) comprises a duct (11) placed in the extension of the said ejection duct (5) and a lateral duct (11') opening into the said duct (11), the photosensitive sensor (3') being disposed in the said lateral duct (11'), and in that a reflecting plate (10) is disposed at the junction of the duct (11) and lateral duct (11') in such a way as to deflect the said light signal toward the photosensitive sensor (3').

4. A device according to claim 3, characterized in that the said reflecting plate (10) is

semitransparent.

5. A device according to any one of claims 1 to 4, characterized in that the said photosensitive sensor (3, 3') is sensitive to infrared radiation.

6. A device according to any one of claims 1 to 4, characterized in that the said photosensitive sensor (3, 3') is sensitive to ultraviolet radiation.

7. A device according to any one of claims 1 to 6, characterized in that the said photosensitive sensor (3, 3') is isolated from the said gas flow by a leak-tight partition (8) that is optically transparent at least in the range of sensitivity of the said photosensitive sensor (3, 3'),

8. A device according to any one of claims 1 to 7, characterized in that it comprises means for filtering, amplifying and recording the output signal of the said photosensitive sensor (3, 3').

9. A method for controlling an operation of laser-beam welding, resurfacing or machining of a part, characterized in that at least one light signal penetrating into the said ejection duct (5) in the direction opposite to the ejection of the said gas flow and originating from the interaction between the said laser beam and the material of the said part during the said operation of welding, resurfacing or machining is received by means of a device according to any one of claims 1 to 8, in that the variation of the said at least one light signal as a function of time is

compared with at least one reference signal obtained under conditions such that no unacceptable volume or surface defect is present on the said part, and in that acceptance or rejection of the welded or machined part is decided by comparison of the said light signal measured during the said operation of welding, resurfacing or machining and the said reference signal.

10. A method for controlling an operation of laser-beam welding, resurfacing or machining of a part, characterized in that at least one light signal penetrating into the said ejection duct (5) in the direction opposite to the ejection of the said gas flow and originating from the interaction between the said laser beam and the material of the said part during the said operation of welding, resurfacing or machining is received by means of a device according to any one of claims 1 to 8, in that the variation of the said at least one light signal as a function of time is compared with at least one reference signal obtained under conditions such that no unacceptable volume or surface defect is present on the said part, and in that the welding, resurfacing or machining parameters are automatically controlled as a function of the comparison of the said at least two signals.